Post traumatic septic arthritis of the elbow and osteomyelitis of the distal radius in a 12-year-old child

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Abstract

Septic arthritis and Osteomyelitis are important conditions that must be excluded in a child presenting with musculoskeletal pain. A delay in diagnosing such conditions may result in significant morbidity and mortality. This is a rare case of a patient that developed ipsilateral concomitant osteomyelitis and septic arthritis of the same limb in a child following a fall.

Background

This case report highlights the importance of diagnosing and managing musculoskeletal pain in children. The majority of musculoskeletal pain in children is soft tissue or bony injuries following a fall, however, inflammatory conditions such as osteomyelitis and septic arthritis must be ruled out. The importance of an accurate diagnosis and prompt management cannot be stressed enough for patient with septic arthritis and osteomyelitis, as a delay in treatment may result in significant morbidity and mortality. We report a rare case where a child developed septic arthritis and osteomyelitis in the same limb following a simple mechanical fall. From this case we can learn the importance of follow up for children with pain of unknown cause and highlight the importance of the of diagnosing and managing septic arthritis and osteomyelitis and the challenges that may arise.

Case report

A 12-year-old boy presented to the Emergency Department (ED) complaining of pain in the right elbow three days following a mechanical fall on the beach. Apart from the right elbow, there were no other injuries to note. On examination the patient was Apyrexial. There was local tenderness to the right elbow but it was not red or hot to touch. Neurovascular status was normal. A plain radiograph was performed of the right elbow which was normal. The child was discharged home with a backslab cast and a fracture clinic follow up appointment. Five days later, the child attended the fracture clinic appointment, with increasing pain in the elbow, feeling nauseous and generally unwell. On examination, the right elbow was red and associated with a reduced range of movement. There was also swelling of the right forearm and pus which grew staphylococcus aureus. The bone edge from the distal radius was sent along for further analysis which later returned confirming osteomyelitis. Post-operatively the patient continued to have temperature spikes and raised inflammatory marker despite the surgery and antibiotics so the patient was then taken to theatre for a second washout of the right elbow and right wrist. Following the second procedure the child started to show signs of improvement. The distal radius bone fragment analysis confirmed osteomyelitis. Repeat MRI scan after surgical washout showed marked synovitis in the elbow but no focal infection. The patient was discharged ten days after the second washout no local or systemic signs of infection. The patient was followed up at one week and one month. At the one month follow up appointment, the patient had return of full range of movement and normal inflammatory markers.

Discussion

Joint pain is a common presenting complaint in children. The three main groups of differential diagnoses for joint pain include: trauma, malignancy [1] and arthritis either reactive, inflammatory or septic [2,3]. The presence of minor trauma does not exclude other causes. This case report highlights the challenges that may arise when faced with a child presenting with joint pain and the importance of follow up.

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Radiographs, bone scans, ultrasound scans and magnetic resonance imaging (MRI) scans. Of all, MRI scan is currently the imaging modality of choice, especially for osteomyelitis [10]. The main MRI findings in septic arthritis are synovial enhancement (98%), perisynovial oedema (84%), joint effusion (70%), fluid outpouching (53%), fluid enhancement (30%), and synovial thickening (22%). Associated osteomyelitis is often diffuse and appears as abnormalities in T1 signal sequences [11,12]. Utilizing advanced imaging (CT scan, bone scan, and/or MRI studies) in patients with septic arthritis may shorten hospital stays, decrease the number of operative procedures required, and possibly limit infection-related sequelae by identifying concurrent infections earlier [4]. The most common causative organism is Staphylococcus aureus [13] followed by MRSA and Streptococcus pneumoniae [14]. Hip joint is the one which is usually affected. Knee joint follows in hierarchy, whereas elbow joint is more rarely involved [15]. Early hospital admission, intravenous antibiotic therapy and possibly surgical intervention have been proven to be affected as treatment. Intravenous antibiotics should be administered for a minimum of for 2-4 days followed by 20 days of oral therapy for osteomyelitis or 10 days for septic arthritis [3,10]. To the best of our knowledge this is the first delayed onset elbow septic arthritis and radial osteomyelitis that has been reported, with eight days from initial symptoms to laboratory and radiological findings which led to the final diagnosis.

References


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